

MASS. EA56.1: 992



GOVERNMENT DOCUMENTS
COLLECTION

1993

UNIVERSITY OF MASSACHUSETTS
AMHERST

Pesticide Bureau

1992 Annual Report

Division of Regulatory Services
Department of Food and Agriculture
Executive Office of Environmental Affairs

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Introduction

The Pesticide Bureau in the Division of Regulatory Services of the Department of Food and Agriculture is the lead regulatory agency for pesticides in Massachusetts. The Pesticide Bureau operates under the authority of Massachusetts Pesticide Control Act (M.G.L. Chapter 132B). The implementation of the Act is carried out through the Pesticide regulations (333 CMR).

The following is a summary of the activities of the various programs operated within the Pesticide Bureau. The Bureau has also prepared a document which summarizes the entire scope of regulatory programs and controls on pesticides. This document "Pesticide Guidebook: Regulation, Registration and Resource Directory" is available by writing to the Pesticide Bureau, Department of Food and Agriculture, 100 Cambridge Street, Boston, MA 02202.

◆ This information available in alternate format upon request ◆

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Enforcement

Enforcement staff met with various health agents individually as well as through the Massachusetts Health Officers Association. As a result the Enforcement Program received an increased number of calls from Boards of Health regarding complaints, requests for information and guidance in pesticide matters.

In order to improve case tracking, an EPA developed computer program designed to track enforcement cases and assist in quarterly and year end summaries is being evaluated.

Enforcement Actions

These two actions continue the close co-operation with, and assistance from, the Attorney General's Office begun last year.

- Civil suit brought against a cranberry grower by the Attorney General's Office in conjunction with the Division of Marine Fisheries and the Pesticide Bureau, resulting in a fine of \$30,000 and orders to correct a water management problem which had caused a significant fish kill.
- With the assistance of the Attorney General's Office, a successful criminal prosecution was conducted against a flagrant, long standing violator of the licensing requirements, resulting in a 9 count criminal conviction and a fine of \$2,700.

The Enforcement section continues to conduct routine inspections of pesticide user establishments, producer establishments and investigate complaints.

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Use inconsistent with label, operate in careful manner	1
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Certification and Training

Each year the Pesticide Certification and Licensing program reports on its activities and accomplishments. Usually, this report is complete with statistics pertaining to such things as "How many individuals were licensed in a given year?" and "How many state pesticide examinations were administered during a particular year?" and so forth. For the most part, this information is particularly meaningful to the Pesticide Bureau and Department. However, these statistics are far more important to all of us in what they represent on an annual basis. Clearly, these numbers provide verification that this agency is carrying out its statutory mandate in accordance with both state and federal requirements. Further, these numbers exemplify an on-going commitment to assure the public that individuals have the basic knowledge to use pesticides in an environmentally compatible and responsible manner once they become certified or licensed in the Commonwealth.

Each year a number of examinations are administered on a monthly basis statewide. Generally speaking, more exams are held during the springtime months to accommodate the peak number of individuals seeking pesticide licensure. Although our main task is to administer state exams in a secure and smooth fashion, we have also used this process to acquaint the exam candidate with the enforcement personnel and their roles. Enforcement staff routinely assists at the exams. The feedback has been positive and helps the candidates better understand how they fit within the regulatory scheme.

Certification/Licensing taken in 1992

Core Exams	1,247
Specialty Exams	1,224
Dealer Exams	19
 Total 1992 credentials issued	 5,750
 Private Certification	 1,567
Commercial Certification	2,688
Commercial Applicator License	1,357
Dealer License	138
 1992 Renewals Issued	 5,567
1992 Renewals Returned	4,651

A total of 5,567 pesticide license renewal applications were mailed to eligible individuals. Of the 5,567 mailed out, 4,651 individuals renewed their pesticide certification and/or license for 1992. This represents a renewal rate of approximately 83.5%. This figure is a bit less than the 89% figure of last year. Nonetheless, it is a good compliance rate considering the various factors that could account for individuals not renewing their 1992 pesticide certifications and/or licenses. These factors may include retirements, death, insurance costs, and particularly company downsizing, unemployment, and consumer cutback for services during 1992.

Recertification (Retraining) Audit

Once again, the Pesticide Bureau performed an audit of pesticide applicators who took and passed state examination five (5) years ago. During this period of time, certified pesticide applicators are required to attend retraining programs for the purpose of maintaining and enhancing their applicator competency. They must obtain a total of three (3) credits over the five year period. A formal letter and audit form were sent to a group of applicators totalling 449. A 100% audit of this group took place from September 1, 1992 through October 1, 1992.

Of the 449 applicators, 162 of an applicators entire record and/or parts of their record were purged from the pesticide data base. (Note: a number of applicators hold commercial certification in more than one category). Therefore, approximately 64% (287 out of 449) of the individuals complied with current recertification (retraining) requirements.

For the most part, the Bureau would like to see the percentage of people attending educational programs much higher. It was observed that this 64% represented individuals who had obtained many more educational retraining credits than required (3 credits within a five year period). It appears these individuals are very interested in attending and participating in these programs that are sponsored by the state, extension system, and professional associations.

The percentage of individuals in compliance regarding recertification is very consistent with last year's figures. The Bureau has already begun to notify applicators about 1993 pesticide recertification audit. To this end, better notification and communication could enhance awareness which might lead to a higher percent compliance rate for next year.

Pesticide Product Registration

In order to distribute, purchase or use a pesticide in Massachusetts, the product is subject to a two-tiered registration process. Before Massachusetts is able to consider registering a pesticide product, the product must be registered with the U.S. Environmental Protection Agency.

Once a pesticide has gone through the federal registration process, it must also be registered in Massachusetts. In order to be considered for registration, an application must be submitted to the Pesticide Bureau. The application includes a cover information page, the product label and a material Safety Data Sheet.

New pesticides are registered generally on a monthly basis. The technical staffs of the Pesticide Bureau and the Department of Public Health work jointly on reviewing every pesticide product application. Once the review is completed the applications are brought to the Pesticide Board Subcommittee for consideration.

A registration is valid for a period beginning with the actual date the Subcommittee approves the registration and ending on the next June 30th. Each registration must be renewed annually, no later than July 1.

- 2,451 new pesticide products were registered in Massachusetts from July 1992 through December 1992.
- 603 companies renewed their pesticide product registrations.

Special Local Needs Registrations (SLN)

When a special local problem exists that can only be mitigated through the use of a particular chemical that is not federally registered for that particular use, that chemical's use is regulated through the issuance of a Special Local Needs registration. There are currently nine (9) active SLNs registered in Massachusetts. Current SLNs are listed in Appendix A.

Experimental Use Permits (EUP)

An Experimental Use Permit is required to control potential hazards of pesticide experimentation under out-of-door, greenhouse, and domestic animal trial conditions. EUPs are effective for a specific period depending upon the requirements of the testing program submitted, but shall not exceed one year. A Summary of all EUPs issued is included in Appendix A.

Subcommittee Action Highlights

- At the June 12, 1991, Pesticide Board Subcommittee meeting, the Subcommittee discussed the product FoneKleen (registrant Perfectdata) regarding the label directions for use of the product to kill the AIDS virus and the product's use on telephones. The Subcommittee had significant concerns regarding possible misconceptions from the labeling that this product was intended to kill the AIDS virus on telephones.

Therefore, the Subcommittee moved "to deny the application for registration of FoneKleen, EPA Reg. No. 1130-6-63964, based on the fact that the labeling is misleading, and can potentially result in misuse or inappropriate use and result in unreasonable adverse effects on humans".

- On October 19, 1991, the Pesticide Board Subcommittee met and moved to deny the application for registration of Global USA, Inc. Electric Bug Stop, EPA Reg. No. 52969-1, based on labeling inadequacies that raise questions concerning ambient air concentrations, particularly relating to humans and pets.

The Subcommittee met on January 15, 1992, at which time, they reconsidered the application for registration of Electric Bug Stop. After review of data supplied by Global USA, Inc. as well as the unit itself the Subcommittee yet had other concerns, specifically, the "Keep Out of Reach of Children" statement which may not be adequate to prevent children from accessing the unit when it is operating or prevent exposure to the vapor produced by the unit. This was particularly a concern as the label indicates the product is suitable for children's rooms.

On February 19, 1992, based on the concern of several members that the primary problem was with labeling inadequacies concerning access to children, the Subcommittee chose not to reconsider the registration application and to uphold the previous decision to deny registration in Massachusetts.

- On December 13, 1991, the Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA) together announced regulatory action on Sporicidin Cold Sterilizing Solution, EPA Reg. No. 8383-5, due to product ineffectiveness. Data submitted by laboratories and competitor industries as well as articles in scientific journals suggested to the EPA that some products are not effective at the concentrations or use dilutions claimed by the label.

On December 18, 1991, as a result of the EPA decision to issue an order to stop sale of Sporicidin Cold Sterilizing Solution, the Massachusetts Pesticide Board Subcommittee moved to suspend the product registration of Sporicidin Cold Sterilizing Solution for fourteen days effective upon notification of the registrant. The registrant was afforded the opportunity to be heard on December 31, 1991 but could not attend. During this time EPA and FDA were in litigation with the registrant.

The Department of Food and Agriculture was notified by a representative from Sporicidin,

that it voluntarily cancelled the registration of the product Sporicidin Cold Sterilizing Solution in Massachusetts until the above mentioned issues with EPA and FDA get resolved.

- On April 15, 1992, the Pesticide Board Subcommittee was given a brief presentation by Public Health staff on the current status of DEET containing products in New York State. Effective May 8 1992, in New York State it is unlawful to sell distribute products that contain more than 30% of the active ingredient N,N-diethyl-m-toluamide, commonly known as DEET. The Subcommittee had expressed over the last year, concerns with the adverse effects that may be associated with the use of Deet containing products, especially those with higher DEET concentrations.

The Subcommittee also discussed New Hampshire's advisory issued last year which stated that products containing concentrations greater than 30% of DEET should not be used on children.

On May 13, 1992, It was decided by the Subcommittee to begin the process in Massachusetts, to consider suspending, modifying or revoking the registration of products containing higher levels of DEET (over 30%) at it's June 23, 1992 meeting.

All registrants having DEET containing products in Massachusetts were contacted by certified mail on May 19th and requested to provide the Pesticide Bureau with copies of all studies related to acute and chronic toxicity, efficacy and human use exposure. All registrants were also requested to supply current labels for their DEET products.

At the July 29, 1992, Subcommittee meeting the Subcommittee discussed the materials which were requested from the registrants. Many registrants responded that they did not have the information requested and to contact DEET Joint Venture, an association which represents producers of DEET products.

After serious consideration, the Subcommittee moved to:

Deny re-registration of DEET containing products to those registrants who failed to respond in any way with the requested information and updated labels and to initiate a State Individual Review of all registered DEET containing products registered to companies that have responded to the May 19th letter.

Groundwater Protection

Ground Water Protection Program Update

In the first year of the implementation of the Protection of Ground Water Sources of Public Drinking Water Supplies from Non-Point Source Pesticide Contamination Regulations (333 CMR 12.00), the Department received 17 applications for Pesticide Management Plans (PMP). According to the provisions of the Regulations, a PMP is required to apply any of the Potential Groundwater Contaminants within the primary recharge area (Zone II) of a drinking water well.

The Department forwarded copies of each application including any additional materials to the Departments of Environmental Protection (DEP) and Public Health (DPH) for comment. Following a comprehensive review of the proposed PMP applications, the Department approved, with additional restrictions, 13 PMPs with the concurrence of DEP and DPH. In addition to IPM program requirements further restrictions imposed on the PMPs included: reduced application rates, irrigation limitations, banding of applications, and agreement to allow sampling at wells on site.

A breakdown of the applications granted by crop as well as those denied is as follows:

PMPs Granted

<u>CROP</u>	<u>#</u>
Corn	10
Strawberries	2
Asparagus	1

PMPs Denied

<u>REASON for DENIAL</u>	
Alternatives available	2 (blueberry & cranberry)
Groundwater contamination concerns	2 (corn)

Applications for PMPs were in most instances received, assessed and returned within a two week time frame. In one emergency situation, a PMP application for the use of bentazon on corn to control yellow nutsedge was approved within two days.

PUBLIC DRINKING WATER WELL SAMPLING PROGRAM

The Protection of Ground Water Sources of Public Drinking Water Supplies from Non-Point Source Pesticide Contamination Regulations were designed to mitigate potential contamination of public drinking wells by regulating the use of Potential Ground Water Contaminants (PGC). The Regulations contain provisions which permit the use of PGC within the primary recharge area of public wells if an applicant obtains an approved PMP from the Department. Consequently, the Department initiated a public drinking water well sampling program in order to assess the efficacy of the Regulations and to assure that public drinking water wells were not being contaminated by pesticides permitted under the PMP process.

The Department initiated the sampling program in 1991 to obtain background information of potential impacts of previous PGC applications. The sampling program continues this year in an effort to assess the regulations and assure that the PMP process is not resulting in unacceptable ground water contamination. The program has sampled public drinking water wells throughout the state which have agricultural lands within their zone of contribution.

The initial step in the sampling program was the identification of public drinking water wells which had agricultural land within their primary recharge areas. The Department utilized information on well locations and land use available at MassGIS, the EOEA Geographical Information System (GIS). The Department also requested from the DEP suggestions of wells susceptible to contamination.

The Department identified approximately 90 wells which had 50 or more acres of agricultural land within their primary recharge areas or had been suggested by DEP. Wells chosen for sampling were divided between those with interim and delineated primary recharge areas based on the approximate percentage of each type of primary recharge area as compared to the total number of wells in the state. The 90 wells chosen for sampling represent approximately 15% of all public drinking water wells covered by the Regulations. In addition, many primary recharge areas contain more than one well or overlap the primary recharge area of adjacent wells. Consequently, the sampling program provides a more extensive representation of the condition of the ground water which provides drinking water to public wells.

The Department has sampled 83 wells. To date there have not been any detections of PGCs in any public drinking water well, including wells which have had PMPs granted for the use of PGCs within their primary recharge area. The list of wells to be sampled was revised to 83 from the previously listed wells. Reasons for the revision include: wells that are no longer active, closed wells due to other contamination, no agricultural land uses, and/or wells not yet in operation. The current sampling program was completed in August.

The following is a breakdown by county of the number of proposed public drinking water wells sampled:

<u>COUNTY</u>	<u>#</u>
Barnstable	1
Berkshire	4
Bristol	11
Essex	1
Franklin	8
Hampden	3
Hampshire	7
Middlesex	11
Norfolk	10
Plymouth	9
Worcester	8

EPA Ground Water Protection Strategy

State Pesticide Management Plans

The central goal of EPA's Pesticides and Ground-Water Strategy is to manage the normal, registered uses of pesticides in order to prevent adverse effects to human health and the environment, and to protect the integrity of the nation's ground-water resources. A principal tenet of this strategy is that as a result of the site specific nature of pesticide use and the potential for ground water contamination, the states need to take the lead role in managing agricultural chemicals. In pursuing this goal, the EPA will look for solutions that sustain the productivity and viability of United States agriculture.

In order to promote the state role, the EPA is recommending that states develop Generic State Management Plans to manage pesticides for the prevention of ground-water contamination. This approach permits the tailoring of pesticide management measures to meet the specific local ground water protection needs.

Through the implementation of State Management Plans (SMPs) for pesticides, states may promote the environmentally sound use of pesticides that might otherwise pose a high risk to ground water resources. Generic SMPs should address pesticide use in all geographic areas, including rural and urban areas, golf courses, and rights-of-ways.

The Pesticide Bureau, with the assistance of the Department of Environmental Protection and Public Health, is developing a Generic State Management Plan (GSMP) in order to address the requirements of the EPA's Pesticides and Ground Water Strategy and of the Department's ground-water protection strategy. The GSMP is projected for completion by the end of FY93.

Rights of Way (ROW) Management

During 1992 the ROW Program attempted to address the concerns of both municipalities and the regulated industry especially in terms of response from the Department. Developing a good working relationship between the agency and these bodies was a major goal. This new working relationship brought changes in both attitude and cooperation.

In 1992 staff attended a number of Industry related programs such as the New England wide seminar of applicators and educators for Rights-of-Way held in Gardiner, Ma. and several meetings of the Massachusetts Railroad Association. The Department uses these opportunities to discuss policies and issues and as they concern the industry.

This year there was an increased interaction between the ROW program and local government bodies to solidify the regulatory process. Working with local Boards of Health, Selectmen and Selectwomen, State Representatives, Mayoral Offices and Conservation Commissions the Department has been able to respond quickly and specifically to their concerns regarding the YOP's, areas of private well identification and procedures for approval of both YOPs and VMPs.

In several instances, the Department working closely with local health and conservation commissions, requested that several railroads re-inspect numerous areas they utilize, in search of new private well locations. The railroads did so and determined that several homes bordering the rail lines that should be delineated as no-spray zones because they fell within the guidelines set forth in the regulations.

Compliance Monitoring

Six use observations were conducted by the Enforcement section on utility rights-of-ways. Of these, 4 were conducted on rights-of-ways bordering sensitive areas and 2 were use observations along railways.

Enforcement

Two investigations were conducted in response to complaints about rights-of-ways activities. Each investigation involved one utility and two applicators.

GET STATUS OF REPORTS

Vegetation Management Plans (VMP)

In 1992, one Vegetation Management Plan was submitted to the Department by the Boston and Maine Railroad. After review by the VMP Advisory Panel, the plan was returned to the applicant for additional specific information. The VMP was later re-submitted and accepted.

Yearly Operational Plans (YOP)

Fifteen Yearly Operational Plans were submitted to the Department covering right-of-way activities in 210 towns and municipalities in the Commonwealth.

Sensitive Areas

The Department gathered information from 30 municipalities regarding the identification of private wells under sensitive area protection. Over 96 additional individual private well locations were recorded.

Several industry representatives have used this new information and have identified 5 additional private well locations which were not part of their 1992 Yearly Operational Plans.

Wetland Study Finding

Although utilities are exempt from the Wetland Protect Act, the ROW Program established a mechanism to ensure that the use of herbicides in wetlands would not pose an unreasonable risk to these sensitive areas. The regulations prohibited utilities from using herbicides in wetlands until a finding was issued by the Department stating that herbicides posed less of a risk to wetlands than mechanical control measures to control vegetation. The DFA finding had to be based on a study (the scope of which was approved by DFA and DEP) in consultation with the VMP Advisory Panel.

In August, the Department issued a finding which included a number of conditions. The conditions included limiting the types of herbicides and carriers which could be used, the types of equipment and the requirement of additional data. The original scope of this study did not require short term environmental fate data to be gathered. The finding will ensure that this important data set will be generated.

Initiatives

In 1992 the Department installed four test wells along rail lines in the Barnstable area. Samples collected by the Bureau and analyzed at the MPAL in Amherst have provided information which indicates a virtual non-presence of herbicide along the well sites. These wells sites will be monitored throughout 1993.

Geographic Information Systems (GIS)

As indicated in the Pesticide Bureau's Annual Report for 1991, Geographic Information Systems, or GIS, is a sophisticated computer mapping technology that uses geographic location to integrate and correlate data. Geographically referenced information is maintained and able to be **analyzed** in both a graphic and tabular format with a good GIS. (For a more thorough description of GIS and its initial use within the Pesticide Bureau, please refer to the Bureau's 1991 Annual Report, pp. 13-16.)

GIS and Groundwater Protection

GIS continues to be one of the key components in the effective implementation of the Department's Groundwater Protection Program. As part of this implementation process, the Pesticide Bureau uses GIS to identify those towns within Massachusetts containing Zone IIs (wellhead protection areas) protected under the recently enacted groundwater regulations, 333 CMR 12:00. In turn, maps are printed of each of these communities and mailed to the Boards of Health of each town for review purposes by pesticide applicators. The purpose under the regulations, is for applicators to be able to determine whether their application site falls under a Zone II area and, depending on the product used, whether they are subject to these regulations.

For 1992, the first year of regulatory compliance, 229 towns were identified as having Zone II areas. For 1993, **181** towns have been identified as having these sensitive, wellhead protection zones. This change is due to the revision and input of new public water supply data by the Department of Environmental Protection who maintains this information on MassGIS which, in turn, is able to be accessed by the Pesticide Bureau. This new well information, constitutes the best available, state-wide public water supply data. The Pesticide Bureau will mail the maps depicting these Zone II areas to the respective towns in January of 1993. (Another set of 181 maps remains in-house). It should be noted, that a special arrangement was reached between the Bureau and MassGIS whereby the production of these maps would involve no cost to the Department for this year given that the DFA has not surpassed its map production quota in the past. Given the DFA's budget curtailments and funding restrictions, this arrangement came at an opportune time and the Pesticide Bureau wishes to extend its appreciation to MassGis in its support of this request. Since no new **major**, well information additions or revisions are anticipated, these 1993 maps will be each town's new BASE MAP for the purposes of this regulatory program until replaced by the Bureau.

GIS and Endangered Species

The Pesticide Bureau anticipates using GIS extensively in its support of the implementation of the Federal Endangered Species Protection Program. For a complete account of this Program and the role played by GIS in its implementation strategy, please refer to the 'Endangered Species' section of this Report.

Endangered Species

Background

In 1973 Congress passed the Endangered Species Act (ESA) "to provide protection for animal and plant species that are threatened or endangered of becoming extinct and to conserve the ecosystems upon which they depend." (FR Vol. 54. No. 126/July 3, 1989/Notices. p. 279840). Under Section 7 of the Act, all Federal agencies must ensure that "...any action authorized, funded, or carried out by the agency will not be likely to jeopardize ... a listed species..." (FR Vol. 54, No. 126/July 3, 1989/Notices. p. 279840). This duty extends to the registration of pesticides by the Environmental Protection Agency (EPA).

In 1982, the EPA initiated the development of the Endangered Species Protection Program since previous EPA approaches in an effort to comply with the ESA were criticized as inadequate. Under this program, EPA would review pesticide products on an individual basis and determine whether the registration or re-registration of a particular product "may affect" a listed species or its critical habitat. As part of the consultation process, the US Fish & Wildlife Service (FWS) would provide a 'biological opinion' on this "may affect" determination. This case-by-case approach to product review, however, was criticized for being slow and, generally, did not consider older, more toxic chemicals resulting in inadequate protection for listed species (FR Vol. 54. No. 126/July 3, 1989/Notices. p. 27985). Consequently, criticism in regard to the overall approach of the program, as well as the lack of public involvement, led the EPA to conclude that more time was required for program development.

In 1988, both FIFRA (The Federal Insecticide, Fungicide, and Rodenticide Act) and the ESA were amended. The ESA amendments require that EPA work jointly with the US Department of Agriculture and the US Department of Interior "... to identify appropriate alternatives for implementing a labeling program to protect listed species from pesticides...(and)... require EPA to investigate the best available methods to develop maps, alternatives to mapping, and to identify alternatives to prohibitions on pesticide use.... (and) ... to inform and educate fully those engaged in agricultural production of the elements of any proposed pesticide labeling program..." (FR Vol. 54 No. 126/July 3, 1989/Notices. p. 27984).

Also in 1988, the EPA issued a Federal Register (FR) Notice proposing a revised endangered species protection program and requesting public input. This program revision entailed the use of a 'cluster approach' to product review in contrast to the case-by-case approach previously used. Registrants of pesticide products identified within a particular 'cluster' deemed to cause jeopardy to a listed species, i.e., those for which a "may affect" determination was made, would need to modify their label and provide information on how to protect said species. (Under this program, the "may affect" determination for a particular use of a pesticide was based on the **highest** registered application rate for that use.) Pesticide labels would further need to list all those counties where use limitations applied, and direct users to information 'Bulletins' on the specific county in which the affected product was to be used. In turn, these 'Bulletins' would contain a map of said county identifying the area in which these use limitations applied.

The proposed program resulted in being much more complex and time consuming than anticipated. A number of concerns were voiced regarding the draft maps, the need for greater public input, as well as for additional training and education programs. All in all, several major areas in regard to program development needed to be re-evaluated.

To this end, in July of 1989, the EPA issued a new FR Notice superseding the 1988 FR Notice and outlining the federal program now in effect. The development of the current **Endangered Species Protection Program** responded to a number of the issues raised and, in particular, to criticism of the proposed 'cluster approach' to species protection. That is, in its revision of the previous program, EPA acknowledged that protection of a listed species from pesticides "...can best be achieved by focusing on the listed species themselves, rather than on clusters of pesticide use sites..." as previously adopted. (FR/Vol. 54, No. 126/July 3, 1989/Notices. p. 21988). Consequently, the new Program outline shifts from the 'cluster approach' to a 'species-based' approach for biological consultation. The current Program targets its efforts to those species in the greatest need of protection, i.e., "... The species will be ranked based on their status, vulnerability to pesticides, and other pertinent factors. With the assistance of FWS, EPA will then identify the counties in which each of the ranked species is currently located. The next step will be to determine the agricultural crops and other pesticide use sites that are in the county." (FR/Vol. 54, No. 126/July 3, 1989/Notices. p. 27988). The criteria used to define a "may affect" determination, has also been revised under the current Program. Briefly, the label information indicating a pesticide's **highest** application rate will only be used as a "screening mechanism" not as the basis of a "may affect" determination. That is, products falling under this "may affect" category will be evaluated more thoroughly in an effort to determine the threshold or **lowest** application rate that could impact a listed species.

For the purposes of an effective implementation process, the pesticide labeling/bulletin approach initiated under the previous program has also undergone some revision. For one, the affected products will contain a **generic** label statement, rather than the listing of **all** the affected counties. Users in all counties will be required to comply with the use limitations in the 'Bulletin' for the county in which they intend to use the product. If no use limitations apply in a particular county, that county 'Bulletin' will indicate that the pesticide may be used according to label directions. These 'Bulletins' will continue to include a county map showing the area associated with each species of concern in addition to identifying the pesticide products harmful to this species and the limitations associated with the use of this product. To date, the EPA has developed interim pamphlets for 116 counties throughout the US. (At this time, Massachusetts counties are not featured amongst these interim pamphlets.) These pamphlets will be turned into county 'Bulletins' once the Program is formally adopted. (EPA Endangered Species Update. Pesticides & Toxic Substances. Winter 1992. p.1).

Through the implementation of this revised program approach, the EPA intends to achieve the best protection for a listed species without creating an unnecessary burden on the agricultural community and other pesticide users. At this time, the EPA encourages voluntary measures to protect listed species during this interim period; state-initiated plans are also encouraged and may be submitted to EPA for review and approval. As part of this effort to fully and effectively implement this Federal Endangered Species Protection Program, the EPA enters into cooperative agreements with states to develop a framework for information dissemination and education. Massachusetts has committed to the development of a 'base' work program as outlined below. It should be noted, that these responsibilities fall under the Pesticide Bureau given that the Department of Food and

Agriculture is the designated State-lead agency entrusted with the authority to manage issues relating to pesticides.

State Program Outline

According to 1992 EPA information, Massachusetts has 15 **federally** recognized endangered species - a substantially higher number of wildlife and plants than previously considered by the Pesticide Bureau. Although this information is expected to undergo confirmation by the US FWS in the near future, the Bureau recognizes the need to invest a greater degree of resources in an effort to develop and implement an effective endangered species program as outlined by the US EPA pursuant to FIFRA.

Given that the Office of Pesticide Programs (OPP) anticipates the continuation of **voluntary** activities on the part of pesticide applicators well into the 1993 growing season, the Pesticide Bureau will continue to support EPA's interim program efforts regarding endangered species through the State's cooperative agreement activities summarized below.

Base Work Program : Description of Pesticide Program Activities.

1. Compilation/Dissemination of Information on Federally Listed Endangered Species :

The Pesticide Bureau is working closely with the State's Division of Fisheries & Wildlife - Natural Heritage & Endangered Species Program - in regard to species information including species identification, confirmation and habitat delineation. This inter-departmental liaison is particularly helpful since said agency maintains this information on a GIS (Geographic Information System) capable of being accessed by the Pesticide Bureau's own GIS unit. Furthermore, the continuing research on this data by the State's Division of Fisheries & Wildlife (DF&W) makes this information particularly valuable due to its currency and accuracy. To this end, Pesticide Bureau staff had a formal meeting in October with the DF&W/Natural Heritage Program's data manager. A number of issues were discussed including data exchange and interagency data development. Given the sensitivity of these data issues, an interagency Memorandum of Understanding, most likely, will be required before this information can be accessed and disseminated by the Bureau.

The Pesticide Bureau intends to compare the State's endangered species data maintained on GIS to any information housed in the EPA databases for Region I. This will require analyzing both data sources and, if need be, revising and supplementing the base source of data. In turn, this may require technical expertise to input and maintain any additional information on GIS.

The Pesticide Bureau intends to map the best available species habitat information at the county level in an effort to supplement the EPA's program informational materials. Once these maps are EPA approved, the Bureau will distribute them to those county offices or conservation commissions wherein endangered species habitats have been identified. By informing and further educating pesticide users and the general public of those areas inhabited by endangered species, these maps aim to minimize the impacts of pesticide uses around these sensitive zones or wildlife corridors. Copies of these maps will also be available to the Cooperative Extension System for their educational purposes if solicited. The distribution of these maps will not only supplement the Federal EPA

efforts, but also serve to visibly involve the State in these activities and distinguish the Bureau as an acting partner in this process of species protection.

In addition to the above, the Pesticide Bureau plans to identify pesticide use within the State in an effort to determine which endangered species are most prone to pesticide contamination within the Commonwealth. This will be achieved in two ways :

- The Bureau has access to the State's MassGIS database which includes agricultural landuse data, consequently, pesticide use originating from agricultural practices will be able to be correlated to species habitats subject to the accuracy of the given data source. This 'correlation' may be mapped and used to identify those habitats under the greatest impact from agricultural pesticides. The maps generated at this level may be considered a short-term goal.
- The Pesticide Bureau has required, for the first time this year, that all licensed pesticide applicators submit pesticide use forms which indicate both the pesticide and total amount used for 1991. This information will be required in subsequent years and may be expanded to include location information at the county level. The Bureau plans to input this information into an ORACLE database system which will be linked to the Bureau's already up-and-running GIS unit. Such information will allow the Bureau to 'map' the use of a specific pesticide during a given time span by illustrating **what** pesticide was used **where** (at a county level) at **what** rate (total amount). This information will be particularly valuable for the management of endangered species given the short-term and long-term impact evaluations that may be made of a given pesticide on a given species. This type of information and analyses, also, will be valuable as part of the **Federal Information Response System** discussed below. The time frame for this project is Fall/Winter 1993 and should be considered a medium-term goal in regard to the Endangered Species Program developments discussed here.

2. Information Response System - Framework

The Pesticide Bureau will work closely with the University of Massachusetts Cooperative Extension System in an effort not to duplicate, but rather, to supplement educational materials and outreach programs regarding public information and dissemination on endangered species. The Bureau proposes to write general information brochures regarding pesticides and endangered species and to define the Bureau's role in the development and implementation of this program for distribution to pesticide applicators and the general public including associations such as Farm Bureau, Cape Cod Cranberry Growers Association, Mass Nurserymen's Association, etc. Furthermore, in conjunction with Cooperative Extension Services, the Bureau will disseminate EPA developed educational materials to the affected parties as agreed upon. To this end, Pesticide Bureau staff has initiated contacts and discussion with Cooperative Extension System staff on these various issues.

As part of the information response framework, the Pesticide Bureau intends to utilize GIS extensively as outlined above.

Additional Work Program Activities.

The Pesticide Bureau intends to explore the possibility of engaging in additional work program activities. Until such time, the **base work program** outlined here will be developed and implemented according to the steps discussed throughout this program description.

Conferences/Workshops

This September, Pesticide Bureau staff attended the EPA sponsored pesticide officials program on "Endangered Species and Pesticide Protection" coordinated by the University of Florida. This short course intended for managers of those programs for the protection of endangered species from pesticides, focused on various subject matters including overviews as to the status of the federal program, information on the roles and responsibilities of both the US Fish & Wildlife Service and the EPA, an outlook of Federal and state pilot programs, a focus on various communication and outreach issues, as well as the compliance and legal concerns inherent in the implementation of this program. This workshop proved to be extremely helpful to Bureau staff in its efforts to outline and develop this interim program.

EPA Worker Protection

On August 13, 1992, William K. Reilly, Administrator with the U.S. Environmental Protection Agency announced the signing of a major revision to the Worker Protection Standard for Agricultural Pesticides. The revised standard will require that agricultural employers acquire new workplace practices to reduce or eliminate the risks of exposure to pesticides to their employees and their families as well as themselves.

The intent of the revised standard is to limit workers' exposure to pesticides, to reduce adverse health effects when exposure occurs, and to inform and educate workers about hazards associated with occupational pesticide use.

The standard will affect 3.9 million people employed on the nations' farms, in forests, nurseries and greenhouses whose jobs involve exposure to pesticides.

Employers will be required to provide handlers and workers with ample water, soap, and towels for washing and decontamination as well as emergency transportation in the event that a pesticide poisoning occurs.

Labeling of all agricultural pesticides will be revised to bear much stronger worker protection requirements. Pesticide registrants will be required to add appropriate labeling statements referencing restricted entry intervals (REI's) for pesticides used in the production of agricultural plants.

Employees will be required to use personal protective equipment and be informed about pesticide hazards through safety training.

EPA will be implementing the Worker Protection Standard for pesticide users in two phases:

- Labeling with the new Worker Protection statements may not be sold or distributed before April 15, 1993. This time frame will allow EPA to adequately inform registrants about how to correctly revise their labels and inform end-users about the label specific requirements which they must abide by.
- Generic requirements will be enforceable beginning April 15, 1994.

As the state lead agency, The Department of Food and Agriculture, Pesticide Bureau, has met with EPA Region 1 to discuss the state's role in the implementation of the revised standard. A draft of the worker protection implementation strategy will be submitted to the Region on or about January 5, 1993. Within one month after receipt of the draft, the Region will provide the state with comments. The State will address the Region's comments by March 5, 1993 and forward the revised implementation strategy to the Region.

Worker Protection and Pesticide Storage, Disposal and Transportation

On July 11, 1992 through July 17, 1992, staff from the Massachusetts Department of Food and Agriculture, Pesticide Bureau, attended the Pesticide Regulatory Education Program (PREP) in East Lansing, Michigan. This program was coordinated by the Michigan Department of Agriculture and the U.S. Environmental Protection Agency. The purpose of the program was to introduce regulatory officials to the "Proposed Worker Protection Standards".

The program entailed an overview of the revised Worker Protection Standard and how different groups will be affected by the new Standard as well as other subjects relating to pesticides and pesticide management.

Guest speakers included growers and farmers that house migrant labor in on site labor camps. As part of the program we visited a migrant labor camp. The participants of the program were able to interact with the growers and workers and listen to their perspectives on the benefits of labor camps.

Among other speakers, there was a member of the Migrant Advocacy Group and their legal counsel who provides civil legal services to migrant and seasonal farmworkers and their dependents who come to Michigan to work during harvest.

David F. Goldsmith, MSPH, PhD, Senior Research Associate, Western Consortium for Public Health presented the group with a discussion on the importance of educating health professionals so they may be better equipped to detect and treat pesticide poisonings.

Paul M. Liemandt from the Minnesota Department of Agriculture, gave a lecture on Agricultural Chemical Contamination. There were group discussions pertaining to site investigations and site remediation program procedures.

Worker Protection Standards

On October 25, 1992 through October 31, 1992, The Texas Department of Agriculture and the U.S. Environmental Protection Agency coordinated comprehensive courses for managers of state pesticide programs. The program's goal was to enhance state and regional capabilities for developing and implementing pesticide regulatory programs for the 1990s and to increase the understanding of environmental topics, such as risk management/ reduction, pollution prevention and risk communication.

The focus of the seven day course was intended to help the states with the development and implementation of a **State Agricultural Worker Protection Program**.

An overview of the Worker Protection Standard was presented by Louis True, Senior Administrator, US/EPA, OPP. Mr. True discussed who the new Worker Protection Standard covered and how the new regulations would expand the requirements for issuing warnings about pesticide applications, use of personal protective equipment, and restrictions on entry to treated areas.

New requirements have been added for decontamination, emergency assistance, maintaining contact with handlers of highly toxic pesticides, and pesticide safety training.

Pesticide registrants are required to add appropriate labeling statements referencing these regulations and specifying application restrictions and provisions on personal protective equipment for handlers and early-entry workers.

James Boland, Deputy Chief, Occupational Safety Branch, US/EPA, introduced a slide show titled "The Worker Protection Standard for Agricultural Pesticides--A Comprehensive Look". The slide show was intended to train those who would be enforcing the regulations or be in a position to train others.

An introduction to the "How to Comply Manual" was given by US/EPA. This manual is intended as a quick reference guide to the Rule. Each participant was given the manual to review and comment. The manual will be used by the states as a vehicle to help growers better understand the rule. EPA plans to publish the How to Comply Manual sometime in February.

A field trip to the Texas Experiment Station took us on a tour of the grounds and we were able to observe different commodities grown for experimental purposes. There was also a brief discussion on personal protective equipment used at the Experiment Station.

Participants were taken on another field trip to the MacManus Packing Operation, a produce field to observe workers who were given instructions and crop sheets under the Texas Agricultural Hazard Communication Law.

A Group exercise required that the participants be placed in four different teams. Each team had an EPA representative as a monitor. The goal of each team was to develop a state implementation strategy. This exercise was very intense and stimulating. The teams appointed a representative from their group to present the strategy to the rest of the states and to a panel of judges. At the end of exercise the panel of judges awarded the winning team and expressed why they chose that particular strategy above the rest. Team Four's strategy won and among the states which made up Team Four, was Massachusetts!

Susan L. Santos did a presentation on "Risk Communication to Farm Workers". Risk communication refers to the process of explaining or communicating environmental health and safety or risk information.

An increasing concern over environmental problems, especially those involving toxic chemicals, has led to the realization that effective environmental management is not possible without effective communication.

Risk communication involves active listening, not just speaking. It entails responding to the concerns, opinions, emotions and reactions of the various stakeholders in the risk-communication

exchange and not just providing facts or responding to assumed misperceptions.

Implementation of the Worker Protection Standard is a great task which the Department of Food and Agriculture, as the state lead agency for Worker Safety will coordinate and regulate. The courses offered by both Michigan and Texas have helped immensely by proposing a variety of perspectives and ideas. The Pesticide Bureau has benefited by participating in both programs and the result, in time, will be evident in an effective Worker Safety program in Massachusetts.

The Pesticide Regulatory Education Programs attended by staff of the Pesticide Bureau posed no cost to the Commonwealth as they were both federally funded programs.

Record Keeping

The record keeping initiative was developed during the previous year - 1991. The initiative proposes to collect pesticide use records from all licensed and certified applicators in the state. It was determined that a computerized data maintenance and retrieval system was required to efficiently use the submitted data. A review of the data storage and manipulation requirements indicated that a large scale database management system was required to fulfill current and projected needs.

The Executive Office of Environmental Affairs (EOEA) Data Center was contacted to provide expertise in the choice of database software and assess the ability of the Data Center to develop the required custom software. The software chosen to maintain the use records is ORACLE, a large scale database, which fulfills all the data storage and manipulation requirements. The primary reasons for choosing ORACLE is 1) it is currently available at the EOEA Data Center, 2) The Data Center is able to develop custom programming for our application, and 3) ORACLE may be interfaced with ARC/INFO to maintain concurrent tabular and spatial databases.

The initial time line for completion of the custom software was January of 1992. However due to Data Center staffing issues, the target date completion of the custom software for the use record submission initiative was revised to January 1993.

Pesticide Data System

In 1991 the Pesticide Bureau developed a plan to integrate all the computer data storage requirements of the Bureau into a unified system which has been called the Pesticide Data System (PDS). The PDS is being developed by the Executive Office of Environmental Affairs (EOEA) Data Center and will be accessed through the network. The funds for the development of the PDS are provided by a Special Projects Grant from the EPA.

Components of the PDS include: data storage of the Dealers' Restricted Use Sales Reports, licensed applicator Use Reports, and pesticide product registration information. In addition, the applicator certification program is resident on the same computer platform and will share information regarding the licensing status of dealers and applicators. Moreover, MassGIS is also resident on the VAX platform and is able to share information with the PDS.

The PDS system will interface registered pesticide use and restricted use sales data with aquifer and land use information, which currently exists on ARC/INFO, to produce a system which identifies land areas, their associated pesticide use, and an assessment of the potential impacts of pesticides on ground water and other sensitive sites. This system will also be used as part of the Massachusetts Agricultural Chemical Ground Water Protection Strategy as required by the EPA to identify potential problem areas, maintain a tracking system of controlled pesticide use in Zone IIs for the Public Well Protection Regulations (333 CMR 12.00), and to compile use data on pesticides within the Commonwealth.

This PDS integrated data system is a novel approach which addresses the need to predict ground water vulnerability required by the Agricultural Chemicals Ground Water Protection Strategy. Assessments of potential ground water contamination potential will be made utilizing land use, specific pesticide use, and aquifer sensitivity. The PDS is an important component of the State Ground Water Protection Strategy and of the State Management Plan requirements of the EPA Ground Water Protection Strategy.

The first part of the paper discusses the importance of understanding the underlying mechanisms of the observed phenomena. This is followed by a detailed description of the experimental setup and the data collection process. The results are then presented in a series of tables and figures, which are discussed in detail in the following sections.

The second part of the paper focuses on the analysis of the data. This involves a series of statistical tests and models that are used to quantify the relationships between the variables. The results of these analyses are presented in a series of tables and figures, which are discussed in detail in the following sections.

The third part of the paper discusses the implications of the findings. This involves a series of discussions and conclusions that are drawn from the results. The paper concludes with a series of recommendations for future research and a final summary of the findings.

The fourth part of the paper discusses the limitations of the study. This involves a series of discussions and conclusions that are drawn from the results. The paper concludes with a series of recommendations for future research and a final summary of the findings.

New Regulations

In late 1992, the Department proposed three amendments to the Pesticide Board regulations 333 CMR. These amendments entail new regulations relative to applications of pesticides in indoor settings, a revision and modification of the Licensing and Certification Regulations (sections 9 and 10) and the re-organization of certain parts of section 10 into section 13, Standards of Application.

Regulations Relative to the Commercial Application of Pesticides to Indoor Settings

The Department of Food and Agriculture supports the concept of providing people with pre-notification of and information on pesticide applications and has worked closely with the Indoor Task Force on the development of regulatory standards to address concerns about the application of pesticides to indoor settings. The goals and objectives of the proposed regulations are to ensure that:

- adequate application standards are put in place to minimize human exposure
- individuals are made aware of impending pesticide applications
- information is provided to the public concerning pesticide applications and individuals have access to certain information about pesticide applications

Pesticide Licensure Task Force Recommendations

The Pesticide Licensure Task Force developed recommendations to improve the certification and licensing process. Briefly, these recommendations were:

- Closed book exams
- Age requirement to sit for an exam
- Combining Core and Specialty exams into one exam
- A waiting period for re-taking failed exams
- Comprehensive re-certification regulations, outlining standards for both providers of education and participants.
- Recertification credit changed to contact hour(s).
- Standard number of contact hours required within a three year period for all pesticide licenses including Dealers and Commercial Applicator Licenses
- Consolidation of exam and initial licensure process to shorten time between the exam and

issuance of a document

- An experience requirement before becoming certified

Reorganization of Regulatory Sections

Section 10 was titled "CERTIFICATION AND LICENSING OF PESTICIDE APPLICATORS. However, it contained subsections that do not directly pertain to the process of licensing or certifying applicators. Consequently Section 10 was reorganized by removing 10.03, General Provisions and moving it into a new Section 13 titled "STANDARDS FOR APPLICATION". This leaves only certification and licensing procedures in Section 10. This change will not result in any changes to the current regulatory standards or language. The change is purely organizational.

Public Hearings on these regulatory changes were scheduled for early December.

Appendix A

Massachusetts EUP Registrations 1992

- AQUA-FYTE (Ecoscience Corp.)
(M. Terrestris) for management of eurasian watermilfoil in fresh water ponds, lakes, reservoirs and drainage canals
EPA EUP NO. 64296-EUP-1
MA EUP NO. 93-0001

- PRIMO TURF GROWTH REGULATOR (Ciba-Geigy Corp.)
(OGA-163935) to retard the growth of turf grasses
EPA EUP NO. 100-EUP-092
MA EUP NO. 93-0002

Massachusetts Active SLN Registrations

- RAMIK BROWN (Hopkins Agricultural Chemical Co.)
(Diphacinone) for use in orchards against rodents
EPA REG. NO. 876-184
MA SLN NO. 77-0001

- WEEDAR 64 (Rhone Poulenc)
(DIMETHYLAMINE-2,4-D) for use on cranberries against weeds
EPA REG. NO. 264-2
MA SLN NO. 79-0001

- OMITE 6E (Uniroyal Chemical Co.)
(PROPARGITE) for use on apples against spider mites
EPA REG. NO. 400-89
MA SLN NO. 82-0005

- DIAZINON 14G (Ciba-Geigy Corp.)
(DIAZINON) for use on cranberries against cranberry girdler larvae
EPA REG. NO. 100-469
MA SLN NO. 83-0005

- TEMIK 15G (Rhone Poulenc)
(ALDICARB) for use on potatoes against the colorado potato beetle
EPA REG. NO. 264-379
MA SLN NO. 86-0002
- BRAVO 720 (ISK Biotech Corp.)
(CHLOROTHALONIL) for use on cranberries against upright and runner dieback
EPA REG. NO. 50534-188
MA SLN NO. 90-0001
- ZINC PHOSPHIDE (USDA/APHIS/Science & Technology)
for use on blueberries against meadow and pine voles
EPA REG. NO. 56228-3
MA SLN NO. 93-0001
- CARBAMATE WDG (UCB Chemicals Corp.)
for use on cranberries against fairy ring disease
EPA REG. NO. 45728-7
MA SLN NO. 93-0002
- OMITE-6E (Uniroyal Chemical Co.)
(PROPARGITE) for use on cranberries against the southern red mite
EPA REG. NO. 400-89
MA SLN NO. 93-0003

